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EDWARDS ANGELL PALMER & DODGE LLP
P.O. BOX 55874
BOSTON, MA 02205

| EXAMINER | |
|---|---|
| GUDIBANDE, SATYANARAYAN R | |
| ART UNIT | PAPER NUMBER |
| 1654 | |
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| 04/29/2009 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/523,498 | RODRIGUEZ ET AL. | |
| | Examiner | Art Unit | |
| | SATYANARAYANA R. GUDIBANDE | 1654 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *03 February 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *8,28-30 and 32-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *8,28,29 and 32-34* is/are rejected.

7)☒ Claim(s) *30* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/3/09 has been entered.

### *Election/Restrictions*

Applicant's election without traverse of group II invention and SEQ ID NO: 1 as the species and in the reply filed on 12/08/06 was acknowledged in office action dated 1/22/07.

### *Specification*

The lengthy specification (37 seven pages) has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### *Information Disclosure Statement*

The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless

the references have been cited by the examiner on form PTO-892, they have not been considered.

In the instant application, applicants cite both patent and non-patent literature references throughout the specification. Applicants are required to submit an information disclosure statement listing the cited references for consideration by the office. Applicants are also required to provide legible copies of all non-patent literature and foreign patents (translated copies if the original is not in English) for consideration.

***Status of the pending claims***

Applicant's amendment to claims 28, 29 and 34 in the response filed on 2/3/09 has been acknowledged.

Claims 8, 28-30 and 32-34 are pending.

Claims 8, 28-30 and 32-34 are examined on the merit.

Applicant's elected species SEQ ID NO: 1 is free of prior art. However, the claim 8 that recites the SEQ ID NO: 1 has been rejected under 35 USC 112, 1st paragraph (written description) and 2nd paragraph (indefiniteness) as set forth below.

SEQ ID NO: 109 (QKHHNYL) by itself has also been found to be free of art. However, the sequence SEQ ID NO: 109 as recited in claims 28 and 30 with further limitation that 5 residues or 6 residues of the consensus sequence QKHHNYL wherein the peptide is a 9 amino acid residues in length is not free of art as illustrated in the rejections below.

Any objections and/or rejections made in the previous office action dated 10/2/07 in its original or modified form and not specifically discussed here are considered withdrawn.

***Withdrawn Rejections***

***Claim Rejections - 35 USC § 112 (New matter rejection)***

1. Applicant's arguments, see 6, filed 2/3/09, with respect to claims 28-30 and 32-34 have been fully considered and are persuasive in view of amendments to claims 28 and 29. The new matter rejection of claims 28-30 and 32-34 has been withdrawn.

***Claim Rejections - 35 USC § 102(b)***

2. Applicant's arguments, see page 4, filed 2/3/09, with respect to the rejection(s) of claim(s) 28 under 35 USC 102(b) over Misawa have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of amendments to claims 28 and 29.

3. Applicant's arguments, see page 5, filed 2/3/09, with respect to the rejection(s) of claim(s) 28 and 29 under 35 USC 102(b) over Alfonso have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of amendments to claims 28 and 29.

***Maintained Rejections***

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claim 34 remain rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention as stated in the office action dated 1/22/07 and reiterated in the modified form as reiterated below. Response to applicant's arguments appears at the end of the reiterated rejection

In the instant application, applicants claim a peptide compound, which selectively binds to the extracellular portion of the human PSMA and comprises at least 5 residues in common with the consensus sequence QKHHNYL (SEQ ID NO: 109) wherein the peptide comprises of one or more amino acid analogues which mimics the chemical structure of the peptide and retains the ability to bind PSMA or a PSMA expressing cell.

From the recitation of the claim it is unclear as to the nature of the peptide analogs, number of amino acids analogs in the peptide and the positions at which the analogs are inserted or substituted in the peptide. The specification provides a 'non-limiting' definition for each of the following terms, 'analogue (analog)', 'derivative' and 'mimetic' on pages 8-13 in the functional language that the peptides, analogs of peptides, peptide derivatives and peptide mimetics mimics the chemical structure of the peptide and retains the ability to bind PSMA or a PSMA expressing cell. Neither the claims as recited nor the specification as disclosed indicate clearly indicate the nature of these amino acid residue analogs and how many of these amino acid residue analogs are present in each peptide? Although, the size of the peptide has been limited by the size, i.e., 9 amino acid in length, the non-limiting definition for the peptide analogs in the specification of the instant application results in recited claim encompassing innumerable peptides of unknown complexity and unknown structural features associated with the peptides. One of ordinary skill in the art would be unable to discern the peptide recited in the

claim with the non-limiting modifications disclosed in the instant specification that would have the desired function, i.e., the ability to bind PSMA or a PSMA expressing cell. Therefore, the claims as recited are indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

***Response to Arguments***

Applicant's argue that many amino acid analogs are commercially available and are routinely used in the peptide synthesis as stated in their previous remarks dated 7/13/07 and one skilled in the art would be able to make (emphasis added by the office) the claimed peptides containing these analogs. Applicants further argue that ordinary skilled in the art could then determine if the peptides fall within the scope of the claim, i.e., the peptide that mimics the chemical structure of the peptide retains the ability to bind PSMA or a PSMA expressing cell by using the functional assays disclosed in the specification.

Applicant's arguments filed 2/3/09 have been fully considered but they are not persuasive. As stated in the rejection the definition for an analog, a derivative and the mimetics are non-limiting as currently disclosed in the instant specification. One of ordinary skill in the art would not be able to clearly discern the structural features in the innumerable peptide analogs that would exhibit the desired functional aspects in the absence of:

i) a limiting definition to the analogs and

ii) in the absence of representative examples of such peptide analogs disclosed in the instant specification.

The instant specification discloses peptides SEQ ID NOs: 1-109 and none of them comprises an amino acid analog, derivative or mimetic as per the non-limiting definition in the specification. Moreover, applicant's argument that one skilled in the would be able to make these analogs given the fact that amino acids analogs are known in the art and are commercially available is also not persuasive, because, the instant rejection is not based on 'how to make?' (enablement). The claim is rejected under 35 USC 112, 2nd paragraph for lack of clarity. Also, reciting a claim using functional characteristics such as 'analogs which mimics the chemical structure of the peptide and retains the ability to bind PSMA or a PSMA expressing cell' for a compound does not impart clarity to the instant claims.

***New grounds of rejections***

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 8 as presented recite that the peptide compound selectively binds to the extracellular portion of the human PSMA consisting of the amino acid sequence set forth as SEQ ID NO: 1. This imply that unknown structural characteristics of the peptide compound selectively binds to the portion of the human PSMA that consists of the amino acid sequence SEQ ID NO: 1. The claim as recites is unclear with respect to the structural attributes of the

peptide compound that binds to the extracellular portion of the human PSMA that consists of the amino acid sequence SEQ ID NO: 1.

However, the claim would be definite if applicants recite the claim as follows with the use of the conjunction '**and**' as shown below:

8. (Currently amended) A peptide compound which selectively binds to the extracellular portion of human PSMA and consisting of the amino acid sequence set forth as SEQ ID NO: 1.

2. Claims 32 and 33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 32 as recited depend from claims claim 28 or 31 in the alternative. Claim 31 has been canceled by the applicants. Hence claims 32 and 33 depend on a canceled claim 31 in the alternative. Therefore, it is unclear as to what limitations of canceled claim 31 are imported into instant claims 32 and 33.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 8 and 32-34 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the

relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 8 as presented recite that the 'peptide compound' selectively binds to the extracellular portion of the human PSMA consisting of the amino acid sequence set forth as SEQ ID NO: 1. The claim as recited implies that peptide compound of unknown structural characteristics selectively binds to the portion of the human PSMA that consists of the amino acid sequence set forth as SEQ ID NO: 1.

Factors to be considered in making the determination as to whether one skilled in the art would recognize that the applicant was in possession of the claimed invention as a whole at the time of filing include:

a. Actual reduction to practice;
b. Disclosure of drawings or structural chemical formulas;
c. Sufficient relevant identifying characteristics such as:
    i. Complete structure,
    ii. Partial structure,
    iii. Physical and/or chemical properties or
    iv. Functional characteristics when coupled with a known or disclosed correlation between function and structure;
d. Method of making the claimed invention;
e. Level of skill and knowledge in the art and
f. Predictability in the art.

While all of these factors are considered, a sufficient number for a *prima facie* case are discussed below.

The claim 8, as recited lacks structural characteristics (complete or partial structure) for the 'peptide compound' that binds to the extracellular portion of the human PSMA that consists of the amino acid sequence SEQ ID NO: 1. MPEP Section 2163 clearly states that "The claimed invention as a whole may not be adequately described where an invention is described solely in terms of a method of its making coupled with its function and there is no described or art-recognized correlation or relationship between the structure of the invention and its function. A biomolecule sequence described only by a functional characteristic, without any known or

disclosed correlation between that function and the structure of the sequence, normally is not a sufficient identifying characteristic for written description purposes, even when accompanied by a method of obtaining the claimed sequence". Hence the recitation of the functional characteristics of the peptide compound as presented in claim 8 without proper structure/function relationship for the peptide compound lacks written description.

In the instant invention, claim 32 depends from the canceled claim 31 in the alternative. The claims 32 and 33 as presented does not provide clear description as to what claim limitations of claim 31 (canceled claim) are imparted into the instant claims.

Claim 34 lacks written description, because, the claim as presented recites that the peptide comprises of amino acid analogs that mimics the chemical structure of the peptide that has the functional ability to bind to PSMA or a PSMA expressing cell. The instant specification provides a non-limiting disclosure to the terms 'analogs' that includes derivatives and mimetics. The specification although discloses 109 peptide sequences, it fails to disclose representative examples of peptides wherein the amino acid residues are modified, or amino acid residues that are substituted with non-natural amino acids or peptide mimetics. As aforementioned (quote from the MPEP section 2163) the recitation of a biomolecule defined only by its functional characteristics does not provide adequate written description to the instant claims.

Hence the claim(s) 8 and 32-34 contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 28 is rejected under 35 U.S.C. 102(b) as being anticipated by De La Cruz, 1989, The Journal of Immunology, 142, 3568-3575.

In the instant application, applicants claim a peptide compound that selectively binds to the extracelluar portion of human PSMA and comprises at least 5 residues of the consensus sequence QKHHNYL (SEQ ID NO: 109) wherein the peptide is 9 amino acids residues in length.

Claim as recited imply that the peptide compound comprises at least 5 residues of the consensus sequence of the peptide SEQ ID NO: 109 (a heptapeptide, QKHHNYL), i.e., any 5 residues of SEQ ID NO: 109 in any order, and the length of the peptide is 9 amino acids residue.

De La Cruz discloses a peptide that is 9 amino acid residues in length **KH**IE**QYL**KK (7G8:329-337, page 3569, column 1, table 1). Peptide of De La Cruz comprises the residues K, H, Q, Y and L that corresponds to 5 amino acid residues of the instantly claimed SEQ ID NO: 109 (a heptapeptide, **QKH**HN**YL**) (emphasis added to indicate the common amino acid residues shared by the instant application and the prior art reference). Since the peptide of De La Cruz discloses the 5 residues of the instant peptide, SEQ ID NO: 109 as required by the instant claim 28 in a 9 amino acid length peptide, it is inherent that the peptide of De La Cruz selectively binds to extracelluar portion of human PSMA. MPEP section 2112 states that "Thus the claiming of a

new use, new function or unknown property which is inherently present in the prior art does not necessarily make the claim patentable". In the instant case, the peptide comprising at least 5 residues of the consensus sequence of SEQ ID NO: 109 is known in the prior art as disclosed in De La Cruz. Hence the peptide of De La Cruz inherently possesses the desired property of binding to extracelluar portion of human PSMA.

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 28 and 29 are rejected under 35 U.S.C. 102(e) as being anticipated by Milton (US 2004/0072753).

In the instant application, applicants claim a peptide compound that selectively binds to the extracelluar portion of human PSMA and comprises at least 5 residues (instant claim 28) or at least 6 residues (instant claim 29) of the consensus sequence QKHHNYL (SEQ ID NO: 109) wherein the peptide is 9 amino acids residues in length.

Claims as recited imply that the peptide compound comprises at least 5 residues of the consensus sequence of the peptide SEQ ID NO: 109 (a heptapeptide, QKHHNYL), i.e., any 5 or 6 residues of SEQ ID NO: 109 in any order, and the length of the peptide is 9 amino acids residue.

Milton discloses a peptide that is 9 amino acid residues in length **YNLKKGQTH** (SEQ ID NO: 21, page 14). Peptide of Milton comprises the residues Y, N, L, K, Q and H that corresponds to 6 amino acid residues of the instantly claimed SEQ ID NO: 109 (a heptapeptide, **QKHHNYL**) (emphasis added to indicate the common amino acid residues shared by the instant

application and the prior art reference). Peptide of Milton discloses the 6 residues of the instant peptide, SEQ ID NO: 109 as required by the instant claim 29 in a 9 amino acid length peptide; it also meets the limitation of instant claim 28 which requires at least 5 amino acid residues. Since it discloses the 5 or 6 amino acid residues of instant claims 28 and 29, it is inherent that the peptide of Milton selectively binds to extracelluar portion of human PSMA. MPEP section 2112 states that "Thus the claiming of a new use, new function or unknown property which is inherently present in the prior art does not necessarily make the claim patentable". In the instant case, the peptide comprising at least 5 or 6 residues of the consensus sequence of SEQ ID NO: 109 is known in Milton. Hence the peptide of Milton inherently possesses the desired property of binding to extracelluar portion of human PSMA.

**Art of record**: Takimoto (US 2004/0029197) discloses a 9 amino acid peptide **NLLKH**DSN**Y** (page 33, SEQ ID NO: 99) that reads on the instant claim 28 under 35 USC 102(e) statute.

***Allowable Subject Matter***

Claim 30 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Satyanarayana R. Gudibande whose telephone number is 571-272-8146. The examiner can normally be reached on M-F 8-4.30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cecilia Tsang can be reached on 571-272-0562. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Satyanarayana R Gudibande/
Examiner, Art Unit 1654